WHAT IS CLAIMED

1. A method for effecting a relatively smooth power supply switch-over during a transition from quiescent to active mode of operation of a DC-DC converter comprising the steps of:

(a) in response to a transition in the operation of said DC-DC converter from run mode to quiescent mode, sampling and storing the voltage of an AC compensation filter as a compensation voltage for an error amplifier for said DC-DC converter; and

(b) in response to a transition in the operation of said DC-DC converter from quiescent mode to run mode, coupling said compensation voltage to drive circuitry of said DC-DC converter.

2. The method according to claim 1, wherein said DC-DC converter comprises a pulse width modulation (PWM)-based DC-DC converter, and wherein said drive circuitry corresponds to PWM drive circuitry for said DC-DC converter.

3. The method according to claim 1, wherein step (a) comprises, in response to said run-to-sleep mode transition of said DC-DC converter incrementing the value of a comparison voltage, and in response to said comparison voltage equaling the voltage of said AC compensation filter, terminating said incrementing of the value of said comparison voltage, and maintaining

said comparison voltage by means of a unity gain amplifier.

4. The method according to claim 3, wherein step (b) comprises, in response to said transition in the operation of said DC-DC converter from quiescent mode to run mode, coupling said comparison voltage maintained in step (a) as said compensation voltage to said drive circuitry of said DC-DC converter.

5. The method according to claim 3, wherein step (a) comprises, in response to said run-to-sleep mode transition of said DC-DC converter incrementing the value of a counter, coupling the contents of said counter to a current generator, said current generator producing an output current proportional to the count value of said counter, and coupling said output current to a summing resistor to realize said comparison voltage.

6. An apparatus effecting a relatively smooth power supply switch-over during a transition from quiescent to active mode of operation of a DC-DC converter comprising:

a sample and hold circuit, which is operative, in response to a transition in the operation of said DC-DC converter from run mode to quiescent mode, to sample and store the voltage of an AC compensation filter as a

compensation voltage for an error amplifier for said DC-DC converter; and

a compensation voltage coupling circuit, which is operative, in response to a transition in the operation of said DC-DC converter from quiescent mode to run mode, to apply said compensation voltage to drive circuitry of said DC-DC converter.

7. The apparatus according to claim 6, wherein said DC-DC converter comprises a pulse width modulation (PWM)-based DC-DC converter, and wherein said drive circuitry corresponds to PWM drive circuitry for said DC-DC converter.

8. The apparatus according to claim 6, wherein said sample and hold circuit comprises a comparison voltage generator, which is operative, in response to said run-to-sleep mode transition of said DC-DC converter, to produce an incrementally varied comparison voltage, and in response to said comparison voltage equaling the voltage of said AC compensation filter, to terminate incrementing of the value of said comparison voltage, and a unity gain amplifier which maintains said comparison voltage during sleep mode of said DC-DC converter.

9. The apparatus according to claim 8, wherein said compensation voltage coupling circuit is operative, in response to said transition in the operation of said

DC-DC converter from quiescent mode to run mode, to couple said comparison voltage maintained by said unity gain amplifier as said compensation voltage to said drive circuitry of said DC-DC converter.

10. The apparatus according to claim 8, wherein said sample and hold circuit comprises a counter, the contents of which are successively incremented, in response to a run-to-sleep mode transition of said DC-DC converter, a current generator which is coupled to said counter and is operative to produce an output current proportional to the count value of said counter, and a summing resistor to which said output current is coupled to realize said comparison voltage.

11. In a DC-DC converter having an AC compensation filter coupled in circuit with an error amplifier to which a control voltage and a feedback voltage are supplied, the output of said error amplifier being coupled to drive circuitry for said DC-DC converter, the improvement comprising an arrangement for effecting a relatively smooth power supply switch-over during a transition from quiescent to active mode of operation of said DC-DC converter, by sampling and storing the voltage of an AC compensation filter as a compensation voltage for an error amplifier for said DC-DC converter, in response to a transition in the operation of said DC-DC converter from run mode to quiescent mode and, in response to a transition in the operation of said DC-DC

converter from quiescent mode to run mode, coupling said compensation voltage to drive circuitry for said DC-DC converter.

12. The improvement according to claim 11, wherein said arrangement is operative, in response to said run-to-sleep mode transition of said DC-DC converter, to increment the value of a comparison voltage and, in response to said comparison voltage equaling the voltage of said AC compensation filter, to terminate incrementing of the value of said comparison voltage, and to maintain said comparison voltage by means of a unity gain amplifier.

13. The improvement according to claim 12, wherein said arrangement is operative, in response to said transition in the operation of said DC-DC converter from quiescent mode to run mode, to couple said comparison voltage as said compensation voltage to said drive circuitry of said DC-DC converter.

14. The improvement according to claim 12, wherein said arrangement is operative, in response to said run-to-sleep mode transition of said DC-DC converter, to increment the value of a counter, and couple the contents of said counter to a current generator, said current generator producing an output current proportional to the count value of said counter, and to

couple said output current to a summing resistor to realize said comparison voltage.

15. The improvement according to claim 11, wherein said DC-DC converter comprises a pulse width modulation (PWM)-based DC-DC converter, and wherein said drive circuitry corresponds to PWM drive circuitry for said DC-DC converter.